



7.4 db or 12.2 db gain

DB-406  
450-470 MC

## BROAD BAND GAIN ANTENNA

*Used  
on repeater*

**MODEL DB-406** is a high gain, light weight, high strength antenna for use in the 450 to 470 mc range. It is factory adjusted and checked for maximum gain and minimum VSWR over this same band of frequencies. Although it is normally mounted on the top of a tower it can be side mounted; a side mounting kit is available.

### OPTIONAL RADIATION PATTERN.

The radiation pattern of the DB-406 can be easily changed from a 7.4 db gain omni-directional pattern to a 12.2 db maximum gain directional pattern, or from a directional to an omni-directional pattern.

**BANDWIDTH.** The DB-406 will operate over the entire band of frequencies from 450 to 470 mc without tuning or adjustment of any kind. This permits the DB-406 to give optimum performance for duplex or multifrequency operation. It also allows antennas to be ordered in advance of frequency assignment.

**LIGHTNING PROTECTION.** The DB-406 is constructed entirely of metal, except for the cable harness. The center mast is heavy walled duraluminum tubing and all elements of the antenna operate at DC ground. The result is that the DB-406 is virtually immune to lightning damage.

**DUPLEX OPERATION.** For simultaneous duplex or mobile relay operation the DB-406 can be used with a duplexer (see the DB-4023) to provide symmetrical transmit and receive patterns.

**SPLIT VERSION.** A split version of the DB-406 is available in both omni-directional and directional radiation patterns. Essentially it amounts to two 4.5 db gain omni-directional, or two 9.3 db gain directional, antennas on a single mast. Separate feed lines are provided to the two antennas.

Aluminum mast with pointed top cap provides superior lightning protection.

High strength Duraluminum mast withstands winds of 125 mph.

Simple but secure stainless steel banding clamp quickly changes antenna from circular to directional pattern.

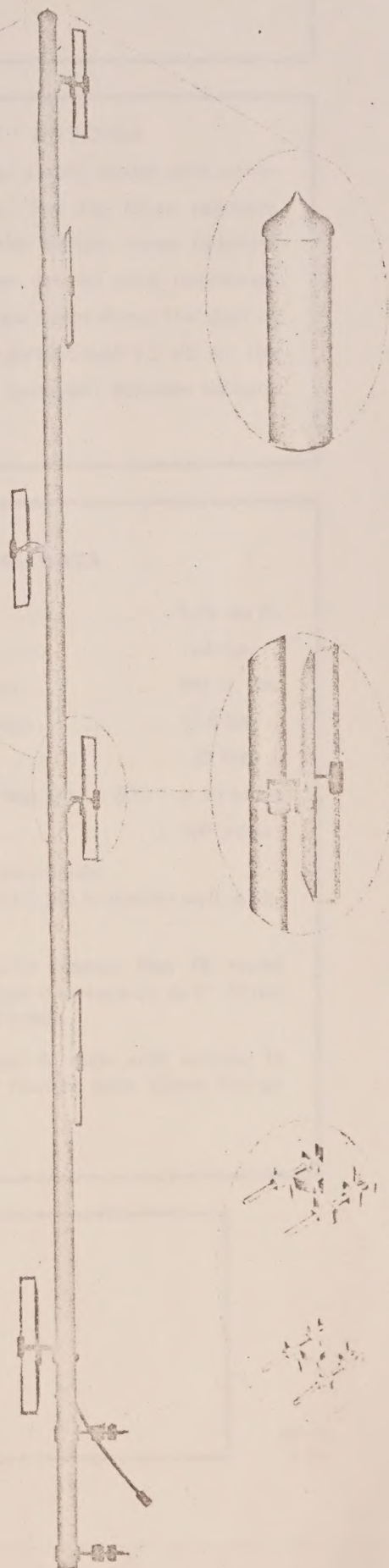
Unitized design radiators with encapsulated feed points for protection from weather.

Molded epoxy connections for weatherproof operation.

Radiator design gives positive D.C. ground and decoupling from mast.

Standard termination is captive type N male, with adaptor to UHF male.

Comes complete with mounting clamps.



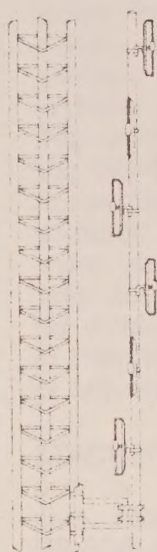
*76. Dave W. 10/14*



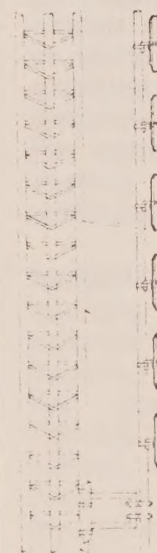
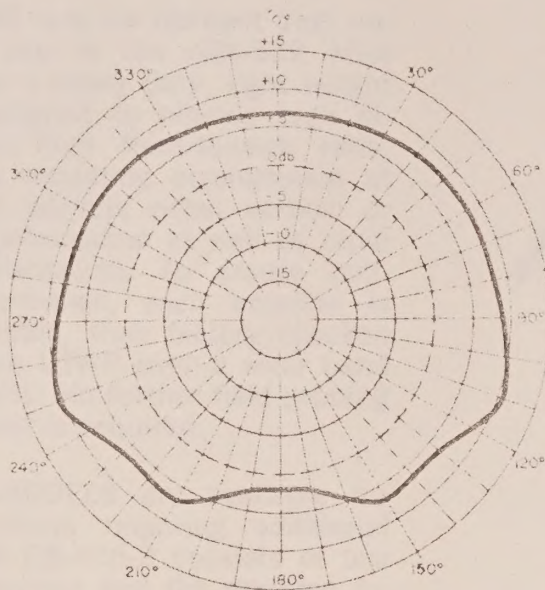


## SIDE MOUNTING

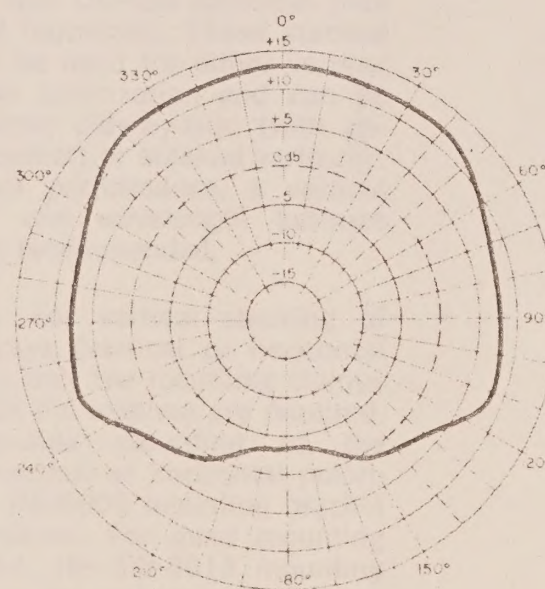
The normal horizontal radiation pattern of an antenna becomes distorted when the antenna is mounted on the side of a tower. However, this distortion often can be used to advantage if the pattern shape is known. The patterns below indicate the appropriate pattern shapes of DB-406 and DB-406E antennas when side mounted on a tower with an 18-24" face using the DB-5007 Side Mount Kit. The 0° direction is from the center of the tower through the antenna mast.



DB-406



DB-406E, elements pointed away from the tower



## BANDWIDTH RESPONSE

This antenna gives essentially the same performance across the band from 450 to 470 mc VSWR is less than 1.5 to 1 across the band, while the gain is nearly constant with a slight increase in the middle of the band.

VSWR of each antenna is measured across the band so as to insure optimum performance on your frequencies in the band.

## DB-406S, "SPLIT" ANTENNA

The DB-406 is also available as a split model with either circular or directional patterns. The top three radiators make up one antenna while the bottom three radiators form the second antenna. Both are 50 ohm impedance terminated at the bottom in male connectors. The gain of each is 4.5 db for the circular pattern and 9.3 db for the directional pattern. Decoupling (isolation) between sections is 32 db.

## MECHANICAL DATA

Maximum exposed area..... 1.73 sq. ft.  
 Windload at 100 mph..... 66 lbs.  
 Bending moment (at top clamp)..... 361 ft. lbs.  
 Net weight with mounting clamps..... 12.5 lbs.  
 Shipping weight..... 22 lbs.  
 VSWR..... less than 1.5 to 1 at 50 ohms  
 Rated power input..... 500 watts  
 Duraluminum mast 6061-T6 Aluminum.  
 Outside diameter 1.75 inches with 0.122 in bottom wall thickness. Total length 12 feet.

Mounting comes complete with clamps that fit round members up to 2½" OD and angle members up to 2". Other size clamps furnished on special order.

Standard Termination is Type N male with adaptor to UHF male attached to end of flexible lead. Other fittings are available on special order.

## ORDERING INFORMATION

Specify model and termination if non-standard

DB-406	7.4 db gain, circular pattern
DB-406E	12.2 db gain, directional pattern
DB-406S	Split model, 4.5 db gain each section, circular pattern
DB-406SE	Split model, 9.3 db gain each section, directional pattern
DB-5007	Side mount kit





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10 dB GAIN

**DB-436**  
406-512 MHz

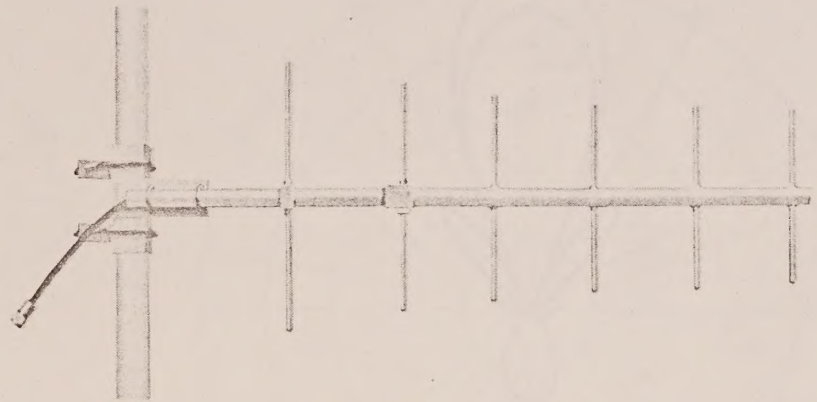
## DIRECTIONAL ANTENNA

**THE DB-436** is a six element Yagi antenna for use in the 406-512 MHz bands. It is a heavy duty, light weight antenna designed to provide high directivity and high front-to-back ratio. The unique mounting arrangement of the DB-436 permits either vertical or horizontal polarization as well as rapid azimuth orientation. To assure optimum performance, each antenna is fully assembled, then factory checked for minimum VSWR over a wide band of frequencies. No further field pruning or adjustment is required.

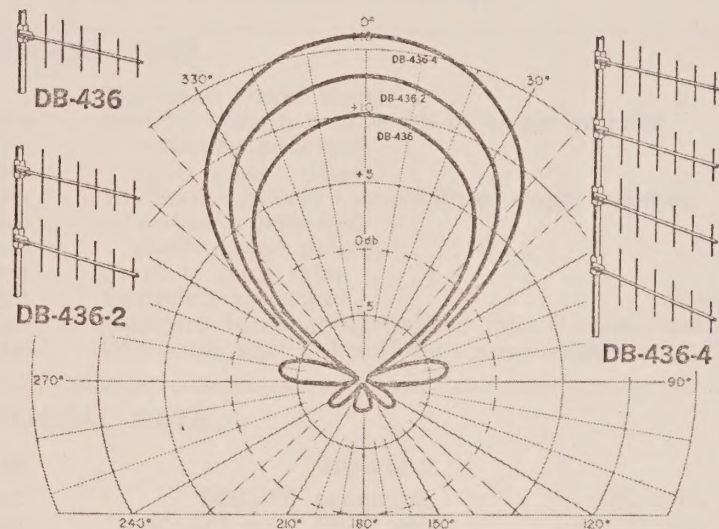
**STACKED MODELS** are available for use in systems requiring additional gain. Model DB-436-2 consists of two DB-436 antennas and the required interconnecting harness. Model DB-436-4 consists of four DB-436 antennas plus all required harnesses. These stacked models can be used for either vertical or horizontal polarization and can be mounted either side-by-side (with appropriate bracket) or stacked vertically. For optimum performance, a vertical spacing of one wavelength between antennas is recommended.

**MOUNTING.** For vertical stacking of multiple arrays (vertical or horizontal polarization), only the mounting clamps supplied with the antenna are required. For side-by-side mounting of the DB-436-2 (vertical or horizontal polarization), the DB-5009 mounting bracket must be ordered. For quad mounting the DB-436-4, the DB-5018 mounting bracket must be ordered. If desired, the DB-436-2 or DB-436-4 can be mounted on opposite sides of a tower to achieve a bi-directional pattern.

**CONSTRUCTION.** All components used in the support boom and elements are fabricated of high strength aluminum alloys. All mounting bracket and hardware components are made of galvanized or stainless steel. The unique design of the enclosed feed assures maximum protection from moisture. The DB-436 is thus a very rugged and durable antenna.

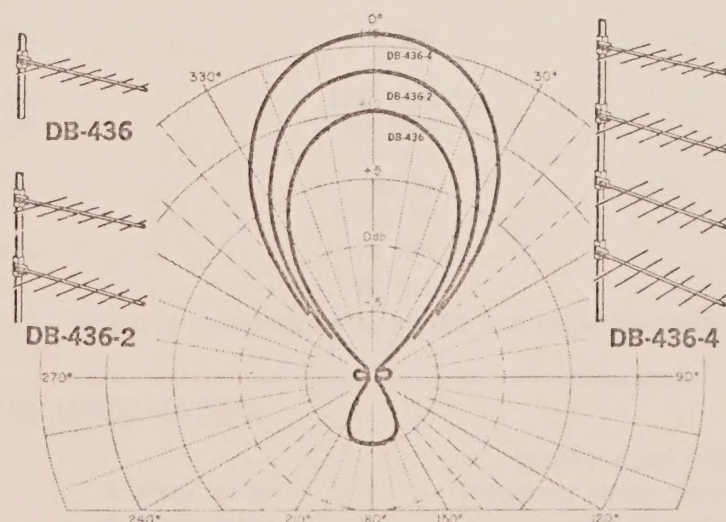


### VERTICAL POLARIZATION



Horizontal pattern showing power gain over a half wave dipole for vertical polarization.

### HORIZONTAL POLARIZATION

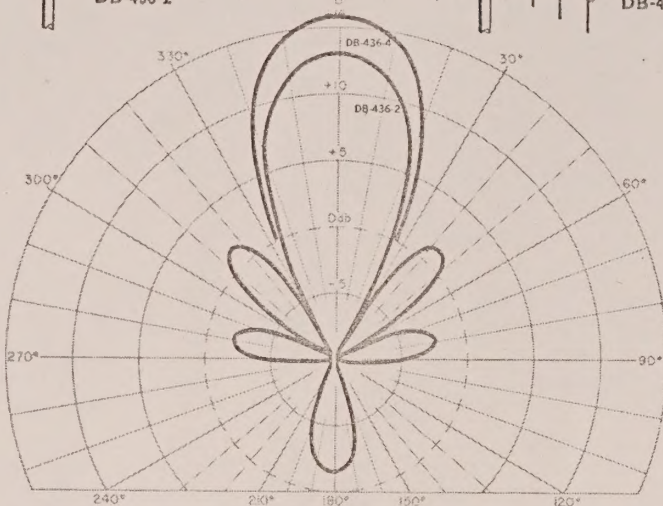
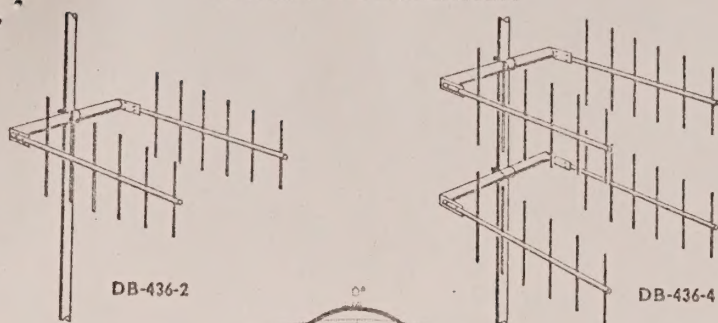


Horizontal pattern showing power gain over a half wave dipole for horizontal polarization.



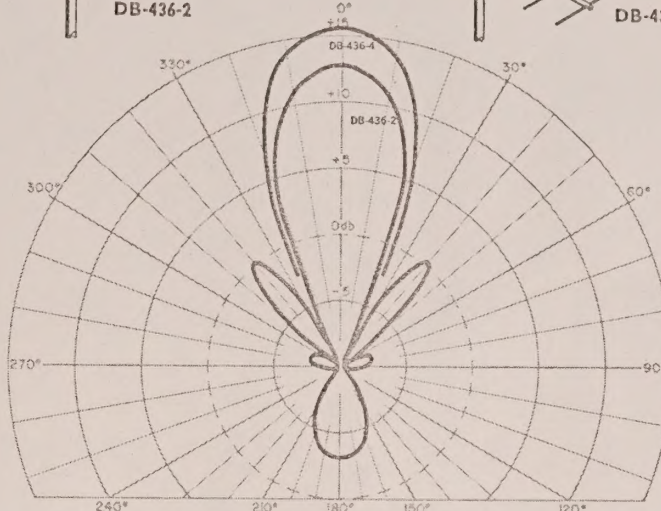
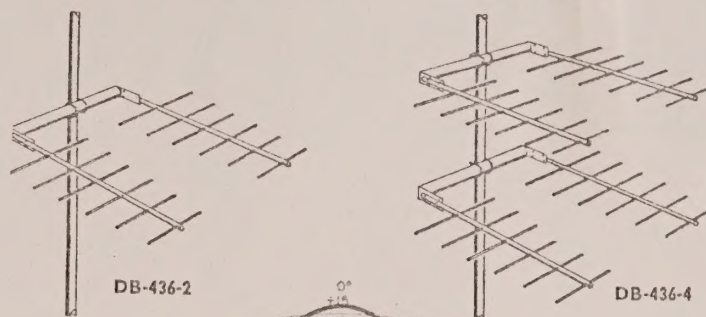


## VERTICAL POLARIZATION



Horizontal pattern showing power gain over a half wave dipole for vertical polarization.

## HORIZONTAL POLARIZATION



Horizontal pattern showing power gain over a half wave dipole for horizontal polarization.

## ELECTRICAL DATA

### Frequency Range

406-420 MHz
450-470 MHz
470-490 MHz
490-512 MHz

Bandwidth . . . . . same as above

VSWR . . . . . 1.5 to 1 or less

Nominal impedance . . . . . 50 ohms

Forward Gain (over half wave dipole) . . . . . 10 dB

Polarization . . . . . Vertical or Horizontal

Maximum power input . . . . . 250 watts

Vertical pattern beamwidth of single antenna, vertically polarized (half power points) . . . . . 44°

Horizontal pattern beamwidth of single antenna, vertically polarized (half power points) . . . . . 60°

Front to back ratio . . . . . 18 dB

Lightning protection . . . . . Direct ground

Standard Termination: Captive Type N male attached to end of flexible lead. Other fittings are available on special order.

## MECHANICAL DATA

### Materials:

	DB-436	DB-436-2	DB-436-4
Support boom	6061-T6 aluminum 1" OD with .083" wall	6061-T6 aluminum 1" OD with .083" wall	6061-T6 aluminum 1" OD with .083" wall
Elements	6061-T6 aluminum 3/8" dia. solid rod	6061-T6 aluminum 3/8" dia. solid rod	6061-T6 aluminum 3/8" dia. solid rod
Mounting brackets	Galvanized steel	Galvanized steel	Galvanized steel
Mounting clamps	S. S. V-bolts	S. S. V-bolts	S. S. V-bolts

Maximum Exposed area (flat plate equivalent) . . . . . 0.45 sq. ft.

Lateral thrust at 100 mph (40 psf flat equivalent) . . . . . 18 lbs.

### Wind rating:

Survival (w/o ice) . . . . . 125 mph
Survival (1/2" radial ice) . . . . . 90 mph

### Dimensions:

Height . . . . . 14 1/2 in.
Overall length . . . . . 35 1/4 in.

Net weight . . . . . 7 lbs.

Shipping weight . . . . . 10 lbs.

Mounting: The antenna is supplied with V-bolts and straps to fit round members up to 3" OD and angle members up to 2" on a side. Other size clamps can be supplied on special order.

## ORDERING INFORMATION

DB-436	Antenna	(10 dB gain)
DB-436-2	Antenna	(13 dB gain) . . . . . 2 stack array
DB-436-4	Antenna	(16 dB gain) . . . . . 4 stack array
DB-5009	Mounting bracket for side-by-side DB-436-2	
DB-5018	Mounting bracket for quad mounting DB-436-4	

Specify exact frequency or frequency range (and termination if non-standard).



